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10/826,492

04/16/2004

Henry Ho

AMAT/8269/CMP/ECP/RKK

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06/27/2007

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EXAMINER

WALDBAUM, SAMUEL A

ART UNIT

PAPER NUMBER

1709

MAIL DATE

DELIVERY MODE

06/27/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/826,492

Applicant(s)

HO ET AL.

Examiner

Samuel A. Waldbaum

Art Unit

1709

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 12-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/16/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 7/06/2004.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-11, drawn to Apparatus for cleaning a bevel, classified in class 134, subclass 94.1.
 - II. Claims 12-18, drawn to apparatus for a cleaning cell, classified in class 134, subclass 153.
 - III. Claims 19-23, drawn to apparatus for a cleaning cell, classified in class 134, subclass 148.
 - IV. Claims 24-30, drawn to Method of cleaning a bevel, classified in class 134, subclass 26.
2. Inventions IV and I or II or III are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus can be used on flat surfaces and can be used to add materials to the substrate instead of just cleaning them.
3. Inventions I and II or III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct if they do not overlap in scope and are not obvious variants, and if it is shown that at least one subcombination is separately usable. In the instant case, subcombination I has separate utility such as it is designed for cleaning the bevel of the substrate, while apparatus II and III are designing a cleaning cell. See MPEP § 806.05(d).

The examiner has required restriction between subcombinations usable together. Where applicant elects a subcombination and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

4. Inventions II and III are directed to related a substrate cleaning cell. The related inventions are distinct if the (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed have materially different designs, apparatus II has a vacuum chuck with rotatable centering posts, while apparatus III has a rotatable vacuum chuck. Furthermore, the inventions as claimed do not encompass overlapping subject matter and there is nothing of record to show them to be obvious variants.

5. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

Art Unit: 1709

6. During a telephone conversation with Young Men Chen on 6/7/2007 a provisional election was made with traverse to prosecute the invention of substrate bevel cleaner, claim 1-11. Affirmation of this election must be made by applicant in replying to this Office action. Claim 12-30 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

7. Claim 7 is objected to because of the following informalities: It states "the cell of claim 1" but claim 1 does not states a cell. Appropriate correction is required.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1 and 6 – 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mayer et al (U.S. 6,537,416, hereafter '416) in view of Anderson et al (U.S. 5,851,041, hereafter '041).

Art Unit: 1709

10. Claim 1: '416 is a substrate wafer bevel cleaner. '416 teaches a movable dispensing nozzle expelling an etchant (col. 11, lines 25 – 50), if the nozzle is capable of dispensing an etchant is capable of dispensing a cleaning fluid to help clean the substrate wafer. '416 does not teach a holding mechanism for the wafers with rotatable centering posts and rotatable substrate support. '041 is a substrate wafer holder. '041 teaches a that the wafer holder is attached to a spin/dry system which would mean that there is a housing holding that system (col. 4, lines 54 – 60). '041 teaches that the substrate support is rotatable through the use of belts and a motor (col. 4 lines 54 – 65). '731 teaches the use of four cooperatively rotatable substrate centering post (fig. 2, part 215, col. 4, lines 20 – 54) to have facilitated the cleaning of the wafer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have include the rotatable substrate support and rotatable centering post of apparatus '041 in apparatus '416 to have facilitated the cleaning of the wafer.

11. Claim 6 – 8: '416 teaches the use of pivoting nozzle in communication with an etchant (col. 11, lines 25 – 50) and a second nozzle in communication with a rinsing solution (col. 8, lines 26 – 45). '416 teaches the use of backside nozzles for dispensing a rinsing solution (col. 8, lines 45 – 55) and a second backside nozzle for dispensing a etchant (col. 9, lines 15 – 25) which is capable of dispensing a cleaning solution.

Claims 2, 3 – 5 and 9 – 10 rejected under 35 U.S.C. 103(a) as being unpatentable over Mayer et al (U.S. 6,537,416) in view of Anderson et al (U.S. 5,851,041) as applied to claim 1 above, and further in view of Adachi et al (U.S. pgpub. 2002/0134512, hereafter '512).

'041 and '416 teach all the limitations of claim 1.

Art Unit: 1709

12. Claim 2: '041 teaches a vertical position shaft (fig. 2, part 215, shows a vertical shaft) and teaches a cap member on terminating end of the shaft (fig. 3, part 216, col. 5, lines 20 – 33). '041 does not teach a raised central portion of the center of the cap and that a substrate center member extending upwards from the cap positioned off-centered. '512 is a substrate wafer cleaner. '512 teaches a that a rotatable pin cover (fig. 12, part 112g, [0087]) that has a raised center from the edge (fig. 8, the raised center can be seen by the upward incline from part 1122 to part 1121) and a projection extend therefrom for centering (fig. 8, part 1121) for holding the wafer in position as the wafer is spinning. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a cap cover as described in apparatus '512 as the cover for the centering post in apparatus '416 in view of '041 for holding the wafer in position as it was spun.

'512 does not teach that the projection (fig. 8 part 1121) is at an offset position from the center of the cap. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have offset the projection from the center of the cover, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

13. Claims 3 – 5: '041 teaches at least 3 rotatable centering post receiving receptacles (fig. 2, centering post, part 215 to connect to part 217, through the housing, part 210 by pin, part 218). Wherein the centering post are linked together so they move as one (fig. 6, part 217 connects the centering posts at each end to the linking arm, part 601), while an actuator (col. 4, lines 60 – 67), which can be powered by air (col. 8, lines 29 – 42) is used to rotate the arms in one cooperative

Art Unit: 1709

movement (fig. 6 – 7, shows the linking arms, part 601, powered by the actuator to collectively move the centering post receiving receptacles, thus moving the arms).

14. Claims 9: '041 teaches that the that the actuator (fig. 6 – 8, part 201) is in communication with the centering post and to simultaneously rotate them in (as seen in the process shown in fig. 6 – 8)

15. Claim 10: '041 teaches that when the center posts (fig. 3, part 215) are rotated that they engage the bevel of the substrate wafer (fig. 3, the dotted outline of the wafer shows where the centering post would engage the bevel edge).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mayer et al (U.S. 6,537,416) in view of Anderson et al (U.S. 5,851,041) as applied to claim 1 above, and further in view of Kurihara et al (U.S. 5,820,685, hereafter '685).

'041 and '461 teach all the limitations of claim 1.

16. Claim 11: '041 and '461 do not teach that the substrate centering posts are vertically movable between a loading and processing position. '685 is wafer support device. '685 teaches that the wafer supports can raise vertically through the bottom of the plate to support the wafer (abstract, col. 1, lines 52 –62). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the center post of apparatus '416 in view of '041 to be elevated and lowered as taught by '685 to provide support for the wafer.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A. Waldbaum whose telephone number is 571-270-1860. The examiner can normally be reached on M-TR 7:30-5:00, 1&3 F off, 2&4 F 7:30-4:00 est. ,

Art Unit: 1709

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-270-1261. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SAW

A handwritten signature in black ink, appearing to be 'SAW' followed by a stylized flourish.

MICHAEL B. CLEVELAND
SUPERVISORY PATENT EXAMINER